CWNP - Wireless Certifications	Certified Wireless Network Professional Certified Wireless Network Administrator (CWNA) Certified Wireless Network Integrator (CWNI) Certified Wireless Network Engineer (CWNE) Certified Wireless Network Trainer (CWNT)

The ***Certified Wireless Network Professional Program™™ (CWNP™™)*** is the IT industry standard for vendor-neutral wireless LAN training and certification. (http://www.cwne.com/

http://www.cwne.com/cwna/exam_objectives.html

The CWNA™™ ***Certified Wireless Network Administrator (CWNA™™)*** certification covering the current objectives will certify that successful candidates know the fundamentals of RF behavior, can describe the features and functions of wireless LAN components, and have the skills needed to install, configure, and troubleshoot wireless LAN hardware peripherals and protocols. A typical candidate should have Network+, CCNA, CNA, or MCP certification or equivalent knowledge, although these certifications are not required.

The skills and knowledge measured by this examination are derived from a survey of wireless networking experts and professionals. The results of this survey were used in weighing the subject areas and ensuring that the weighting is representative of the relative importance of the content.

(http://www.cwne.com/cwna/index.html)

The Certified Wireless Network Administrator (CWNA™™) exam is available at all Prometric Testing Centers worldwide. Wireless LAN Administration classes to prepare students for the CWNA exam are also available worldwide.

The following chart provides the breakdown of the CWNA exam as to the weight of each section of the exam. (http://www.cwne.com/cwna/exam_objectives.html)

Subject Area	**% of Exam**
Radio Frequency (RF) Technologies	24%
Wireless LAN Technologies	17%
Wireless LAN Implementation and Management	30%
Wireless LAN Security	16%
Wireless LAN Industry and Standards	13%
Total	**100%**

The CWNA exam (Exam# PW0-100) consists of 90 multiple choice and multiple answer, delivered randomly. A score of 70% is required to pass the exam (Instructors must score at least 80%). The specific topics covered in the exam can be found in the CWNA Exam Objectives. The scope of an individual's understanding of wireless LAN networking will be evident if they achieve a passing score on the exam due to the diversity and complexity of the exam. The exam covers a broad range of knowledge and even gets down to some distinct level of detail in some areas. Studying for the CWNA exam may take many days. White papers, recent wireless LAN web-based periodicals, manufacturer websites, and any of the wireless LAN books on the market all make good study material for this exam. For information regarding authorized classes visit the training section

Overview: The Wireless LAN Administration training course offers detailed instruction on the foundation concepts and technologies of wireless data networking.

Course Duration: The course consists of 40 hours of combined lecture and labs. The course may be taught in 5 full days or may be spread out over 1 Academic Quarter or Semester depending on the training organization.

Certification: Upon completion of the CWNA Certification course, students will be prepared to pass the CWNA Certification Exam (Exam #PW0-100) at Prometric Testing Centers.

Prerequisites: It is recommended that all students have at least a basic knowledge of networking (as exhibited in Net+, CCNA, CNA, or MCP) prior to enrolling in the course.

Course Outline (http://www.cwne.com/cwna/course_outline.html)

Radio Frequency (RF) Fundamentals

- RF behavior
- Principles of antennas
- Following power output regulations
- RF math calculations

Spread Spectrum Technologies

- Uses of Spread Spectrum
- Frequency Hopping
- Direct Sequencing
- Comparing DSSS to FHSS
- Co-location and throughput analysis

Hardware Installation,

Organizations and Standards

- **FCC rules**
- **Frequency ranges and channels**
- **IEEE 802.11 family of standards**
- **Wireless LAN organizations**
- **HomeRF**
- **Bluetooth**
- Infrared

802.11 Network Architecture

- Joining a wireless LAN
- Authentication and association
- Basic Service Set
- Extended Service Set

Wireless LAN Security

- **Analysis of 802.11 security including WEP**
- **Available security solutions**
- **Types of network attacks**
- **Protecting the network from attacks**
- **Corporate security policies**
- **Security recommendations**

Site Surveying

- Defining business requirements
- Facility analysis
- Interviewing network

Configuration, and Management

- Access points
- Wireless bridges
- Wireless workgroup bridges
- Client devices
- Residential gateways
- Enterprise gateways

Antennas and Accessories

- Omni-directional
- Semi-directional
- Directional
- Determining coverage areas
- Proper mounting and safety
- Performing outdoor/indoor installations
- Power over Ethernet
- Cables and connector usage requirements

- Independent Basic Service Set
- Roaming in a wireless LAN
- Beacons and Probe Frames
- Power management features

Physical and MAC Layers

- Differences between wireless and Ethernet frames
- Collision handling and the use of RTS/CTS
- Throughput and dynamic rate selection
- Analysis of DCF/PCF
- Interframe spacing
- Effects of packet fragmentation

management and users

- Identifying bandwidth requirements
- Determining contours of RF coverage
- Documenting installation problems
- Locating interference
- Reporting methodology and procedures

Troubleshooting Wireless LANs

- Multipath
- Hidden node
- Near/Far
- Identifying and resolving interference problems
- Maximizing system throughput
- Maximizing Co-location throughput
- Channel reuse for roaming
- Range considerations

Wireless LAN Security (CWSP) (http://www.cwne.com/cwsp/index.html)

As wireless LANs explode in popularity and implementation, so does the need for securing these networks. Wireless security, and the lack thereof, is a daily headline in IT news. Security for wireless solutions cannot come from a single software protocol or hardware solution, but from educated wireless networking professionals implementing multiple safeguards.

(http://www.cwne.com/cwsp/course_outline.html)

The ***Certified Wireless Security Professional™™ (CWSP™™)*** certification builds on the foundation of wireless LAN knowledge from the CWNA certification by educating the candidate about the security threats to and weaknesses of wireless LANs. The main topics of this course and the certification exam are hardware, software, protocols, procedures, and design techniques used in reducing wireless LAN security risks. Wireless Security Certification & Training is an essential step in developing your expertise in wireless technologies.

Overview: Wireless LAN Security, the preparation course for the CWSP™™ certification, teaches students the necessary skills for implementing and managing wireless security in the enterprise by creating layer2 and layer3 hardware and software solutions with tools from industry leading manufacturers.

Course Duration: The course consists of 45 hours of hands on learning using the latest enterprise wireless LAN security and auditing equipment. The course addresses in detail Wireless LAN Intrusion, Security Policy, and Security Solutions. The course may be taught in 5 full days or may be spread out over 1 Academic Quarter or Semester depending on the training organization.

All attendees receive hands-on experience configuring, testing, and implementing a broad variety of layer2 and layer3 wireless security solutions using hardware and software from the following vendors:

- BlueSocket
- Colubris Networks
- Cisco Systems
- Fortress Technologies
- SnapGear
- Intermec
- Proxim
- Symbol Technologies
- Funk Software
- Microsoft
- TamoSoft
- Zoom Telephonics
- SafeNet
- System Tools
- Van Dyke Software
- WildPackets
- IPSwitch
- Young Design

Benefits of CWSP Training & Certification include:

- Solid understanding of the security weaknesses of and threats to wireless LANs
- Hands on training in implementation of the best available security techniques
- Standardized training in the latest security software and protocols for wireless LANs
- Getting a step ahead of the competition for wireless integration business
- Achievement of the only certification for wireless security
- Becoming your organization's resource for wireless security issues and decisions

CWSP training classes are now available.The CWSP Exam and Practice Test will be released in Q2 2003

Required: The required prerequisite for enrolling in the CWSP class is passing the CWNA exam, which is available at Prometric Testing Centers worldwide.

Recommended: We recommend that all CWSP candidates achieve either the SCP or Security + certifications prior to attending a CWSP class.

CWSP Training & Certification will cover the following topics:

- Wireless LAN Intrusion
- Wireless LAN Security Policy
- Wireless LAN Security Solutions

The CWSP exam number will be PW0-200. The exam will consist of 60 questions, and requires a passing grade of 70%.

Instructors must pass the CWSP exam with a score of at least 80%.